

AN AYURVEDIC APPROACH ON GERIATRIC OPHTHALMOLOGY – A CONCEPTUAL STUDY

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ABSTRACT

Introduction: In aging process there are multidimensional changes in the physiological psychological and social aspects. The *Darshanendriya* (eye) also having various ailments, which may be manifestation of different types of ocular diseases in old age such as cataract, glaucoma, Age-Related Macular Degeneration (ARMD) and Diabetic retinopathy. Ayurveda clearly states the changes that occurring due to old age comes under the *Vyadhi* of *Swabhavika* (natural origin). So only the complete cure is quite hard. Intention of delay the aging process is the only possible way, which can be attained by *Rasayana* therapy. *Charakacharya* clearly says the *Rasayana* therapy should be started in young age or middle age. **Materials and Methods:** A literature search was carried out pertaining to AREDs and

Treatment modalities under following headings *Pancha Karma*, *Rasayana* therapy along with usage of *Chakshushya Ahara* as well as *Kriyakramas* (Therapeutic procedures) and *Yogic Kriyas* are helpful in arresting the senile ocular conditions. **Results:** Preventive measures like *Hetupariverjan*, Following *Dincharya*, *Rasayana Chikitsa* (rejuvenation therapy) will be more effective to prolong degenerative changes in eyeball. **Discussion and Conclusions:** Through the modification of risk factors, patients may be able to prevent or delay the onset of visual loss associated with AREDs through combined therapy with

preventive measures, *Chakshushya Rasayanas*, eye exercises & *Yoga* will be more beneficial than a single drug therapy.

KEYWORDS: ARED, *Chakshushya Rasayana*, *Kriyakramas*, *Yoga* and Eye exercises.

INTRODUCTION

All the age related ocular diseases will not prevent by care of eye in old age alone. Eye care should be started at the younger age itself, age related changes in the eye are *Swabhavjanya Vyadhis*.^[1] Geriatric diseases are hard to cure completely. Geriatric eye diseases are also the biggest challenge to modern science. With the help of our eyes, we receive about 80 % of knowledge. So every human being must protect his eye & eyesight throughout his life.^[2] As age progresses, it is obvious and inevitable that various changes occur in ocular tissue. Our aim should be prolonged ageing process as well as prevent and treat the diseases in early stage and to so that we can preserve our vision even in the old age. Remarkably increased average lifespan in human beings is the recent advancements in the modern medicine. However, unhealthy dietary habits, changed lifestyle, pollution have resulted in early ageing. Long lifespan is desirable only if psychological and physical health is good. For unhealthy individuals old age can be a curse. This kind of *Ahita Ahara* and *Viharas* cause vitiation of *Doshas* and further it will lead to diseases of the body and impairment of the sense organ.

India has about 77 million people vulnerable to vision-related disorders at or above the age of 60 years representing a large group and the number is estimated to reach 180 million by 2026. The prevalence of cataract in people aged ≥ 60 was 58% in north India (95% CI, 56–60) and 53% (95% CI, 51–55) in south India ($P = 0.01$).^[3] Glaucoma is the second leading cause of world blindness after cataract. The prevalence of glaucoma is increasing worldwide and is expected to affect 111.8 million people by 2040. The prevalence of open-angle glaucoma is reported to be highest in Africa and that of narrow-angle in Asia.^[4] In a systematic meta-analysis, the global prevalence of glaucoma was found to be 3.54%.^[4] Asians represent 47% of those with glaucoma and 87% of those with angle closure glaucoma (ACG). Prevalence of primary ACG (PACG) in Southeast Asian countries is more than the rest of the world.^[5] India accounts for a minimum of 12.9% of primary open angle glaucoma (POAG) blindness and 12.7% of PACG (PACG) blindness in the world.^[6] Dry eye disease is a significant problem for up to 35% of the population, and two-thirds of sufferers are women, with a higher risk in postmenopausal women (Chia et al. 2003). Very severe dry eye affects 8 % of women and 4 % of men over 50 years of age (Schaumberg et al. 2003, 2009). According to the WHO, 31.7

million people were affected by diabetes mellitus (DM) in the year 2000 in India. This is estimated to rise to 79.4 million by 2030, the largest number in any nation in the world. Almost two third of all Type 2 and almost all Type 1 diabetics are expected to develop diabetic retinopathy (DR) over a long period of time.^[7-9] There is no satisfactory treatment for this geriatric eye diseases in modern medicine. Therefore, in this conceptual study; an attempt has been made to find out a better solution through Ayurveda.

AIMS AND OBJECTIVES

To study the role of *Rasayana*, *Kriyakalpa*, *Swasthavrittavichara*, *Yoga*, Eye exercises, on Geriatric Ophthalmology (ARED).

MATERIALS AND METHOD

A literature search was carried out pertaining to AREDs and Treatment modalities under following headings *Dinacharya*, *Pancha Karma*, *Rasayana* therapy along with usage of *Chakshushya Ahara* as well as *Kriyakramas* (Therapeutic procedures) and *Yogic Kriyas* are helpful in arresting the senile ocular conditions.

Anatomical, Physiological & Pathological changes occurring in the eyes due to Ageing^[10]

- **Eyelids** - Laxity of skin, Loss of per orbital fat (*MedoDhatu Kshaya*), & orbicularis oculi muscle (*Mamsa Kshaya*) → Ectropion, Entropion, Trichiasis (*Pakshmaavyavartan*, *Pakshmakopa*)
- **Lachrymal apparatus** - Tears secretions Reduced → Dry Eye (*Rasadhatu & SnigdhaGunaKashaya*) - muscle, Skin laxity → pumping action of tears improper in to the uncut → Epiphora.
- **Conjunctiva** – Lustreless dry dull conjunctiva → Xerosis, Pinguicula like degenerative conditions of conjunctiva, Pterygium (*Rasa, Sneha Kshaya, Shosha*).
- **Sclera**–Scleromalacia perforans, degeneration of fatty hyaline calcareous, elderly women associated with polyarticular rheumatism affected especially.
- **Cornea** – Arcus Senilis → cornea lipoid degeneration. Exposure keratitis (*Vata vitiation*).
- **Lens** – Opacity → Senile cataract.
- **Trabecular meshwork** – Sclerosis → Aqueous outflow obstruction → Intra Ocular pressure increased (Glaucoma).
- **Vitreous** – Senile degeneration → Opacities in vitreous → Floaters.

- **Refractive errors** –elasticity of lens capsule lost, ciliary muscles tone decreased → Hypermetropia and Presbyopia.
- **Retina** -Age related macular degeneration (ARMD), Due to associated systemic diseases various retinopathies in old age e.g. diabetic retinopathy, hypertensive retinopathy. Refractive errors, Cataract, Glaucoma, presbyopia, Age Related Macular Degeneration (ARMD) Dry eye syndrome, are the main disorders can grossly affect visual acuity occurring in old age.

Eye Diseases and Disorders Common in Aging Adults^[11]

- **Cataracts:** area unit cloudy areas that develop within the lens within the front of the attention. The attention lens is evident sort of a lens system. Cataracts keep lightweight from simply passing through the lens to the rear of the attention (the retina), inflicting the loss of seeing. Cataracts sometimes kind slowly, inflicting no pain, redness, or tearing within the eye. Some keep little and don't alter seeing. If they become massive or thick and have a major impact on vision they will nearly always be removed with surgery.
- **Glaucoma:** is sometimes associated with redoubled pressure within the attention. If it's not treated, this condition will result in permanent vision loss and visual disorder. Heredity may be a vital risk issue for eye disease, as is age, race, diabetes, and a few medications. Eye disease is a smaller amount ordinarily caused by different factors like a blunt object or chemical injury to the attention, severe infection, blockage of blood vessels, inflammatory disorders of the attention, and infrequently by corrective eye surgery.
- **Retinal disorders:** may be a leading reason for visual disorder within the U. S. and in different developed countries. The membrane may be a skinny lining on the rear of the attention created from cells that sight visual pictures and pass them on to the brain. Retinal disorders interrupt this transfer of pictures. Common ones embrace age-related devolution, diabetic retinopathy, and visual impairment.
 - **Age Related Macular Degeneration (ARMD):** The macula is that the little central portion of the membrane containing several nerve cells (cones) that area unit sensitive to lightweight. This space of the membrane is answerable for elaborate vision, like biometric authentication and reading. AMD is characterised by the loss of cells during this space inflicting blurred visual modality. It contributes to vision loss however doesn't cause total visual disorder.

- **Diabetic Retinopathy (DR):** This disorder may be a complication of polygenic disease. It happens once little blood vessels stop feeding the membrane properly. Within the early stages of diabetic retinopathy, the blood vessels could leak fluid, inflicting blurred vision or no symptoms in the least. Because the sickness advances, you'll notice floaters, blind spots or cloudiness of vision. New blood vessels could grow and bleed into the middle of the attention, inflicting serious vision loss or visual disorder.

- **Retinal detachment/ detachment of the membrane/detached retina/visual impairment/visual defect/vision defect/visual Retinal disorders:** may be a leading reason for visual disorder within the U. S. and in different developed countries. The membrane may be a skinny lining on the rear of the attention created from cells that sight visual pictures and pass them on to the brain. Retinal disorders interrupt this transfer of pictures. Common ones embrace age-related devolution, diabetic retinopathy, and visual impairment. Disorder}: Retinal detachment happens once the inner and outer layers of the retina become separated. While not a membrane, the attention cannot communicate with the brain, creating vision not possible. Symptoms of visual impairment include: an explosive look of spots or flashes of light; vision that seems wavy, as if you were below water; and a dark shadow anyplace in your field of vision.

- **Conjunctivitis:** happens once the tissue that lines the eyelids and covers the albuginea becomes inflamed. It's typically referred to as "pink eye" or "red eye." It will cause redness, itching, burning, tearing, or a sense of one thing within the eye. Rubor happens in individuals of all ages and might be caused by infection, exposure to chemicals and irritants, or allergies.

- **Corneal disorders:** will cause redness, watery eyes, pain, reduced vision, or a halo impact. The membrane is that the clear, dome-shaped "window" at the front of the attention. It helps to focus lightweight that enters the attention. Disease, infection, injury, poisonous agents, and different parts will harm the membrane.

- **Eye lid problems:** will be the results of totally different diseases or conditions. The eyelids defend the attention, distribute tears, and limit the quantity of sunshine coming into the attention. Pain, itching, tearing, and sensitivity to lightweight area unit common symptoms of palpebra issues. Different issues could embrace drooping eyelids (ptosis), blinking spasms (blepharospasm), or inflamed eyelids close to the eyelashes (blepharitis).

- **Temporal arteritis:** causes the arteries within the temporal space of the forehead, moreover as different areas of the body, to become inflamed and probably stopped. It will begin with a severe headache, pain once change of state, and tenderness within the temple space. Patients could have a chronic fever, shoulder or hip weakness, and scalp tenderness. It should be followed by explosive vision loss that is sometimes permanent. It's additional ordinarily diagnosed in senior ladies.

Basic Principles of treatment in Geriatric eye disorders

In Ayurveda, age related changes in the eye are included under *Swabhavjanya Vyadhis*¹. No any other information regarding geriatric ophthalmology was found in the classics. In Ayurveda lifespan is divided in three stages viz. *Balya*, *Youvana* and *Vardhakya* where *Kapha*, *Pitta* and *Vata dosha* are predominant respectively. On *Vardhakya* stage, *Vata dosha* is predominant. There is remarkable decrease of *Dhatus*, *Indriyabala* and *Oja*.^[12]

Table 1: Vardhakya janya Chakshu roga in Ayurveda.

Dosha	<i>Vata Vruddhi, Kapha Khsaya, Pitta Dushti</i>
Guna	<i>Ruska Guna Vruddhi, Snigdha Sthira Guna Kshaya.</i>
Dhatu	<i>Sarva Dhatu Kshaya, Oja Kshaya.</i>
Indriya	<i>Bala hani.</i>

Table 2: General treatment for Geriatric Eye Disorders in Ayurveda.

Following Dincharya (Daily Regimen)	<i>Anjana Karma, Padabhyanga (Foot massage), Pratimarsha Nasya, Abhyanga, Tarpana, Putapaka, Dhoomapana, Gandoosha, Mukhalepa, Shirolepa</i>
Murdha Taila	<i>Shiro Basti, Shiro Pichu, Dhara, Basti</i>
Aharas & Viharas (Healthy Diet & Regimen)	<i>Hitakara Ahara</i>
Avoid Apatya Aharas & Viharas	<i>Divaswapna, Nisajagaran, Vidahivishatambhibhojan, Vegarodhana, Ajeerna, Adyasana, Soka, Krodha.</i> ^[21]
Vataghna Upakramas	<i>Snehana, Mrdu Swedana, Snehapana, Ghritapana, Mrdu Virechana, Basti,</i> ^[13] <i>Nasya (Snehana).</i>
Kriya Kalpa	<i>Seka, Anjana, Aschotana, Tarpana, Putapaka</i>
Shamana chikitsa	<i>Rasayana, Chakshushya medicines.</i>
Eye exercises	Palming, distant and near focusing, rotational movements of eye etc.
Yogic Kriya	<i>Trataka (concentrating on specific object/candle light), Bhramari, Suryanamaskara (Sun salutation)</i>

❖ Following *Dinacharya* (Daily Regimen)

- 1) **Anjana Karma** - As eyes are mainly of *Teja* property, they can easily get affected by *Kapha Dosha*. So regular *Anjana Karma* is suggested.^[14] Hence regular *Anjana Karma* will help in avoiding ageing effects in the eye. *Rasanjana* should be done every week.
- 2) **Padabhyanga (Foot massage)** will also be helpful in maintaining healthy eyes. In the centre of the feet, 2 *Siras* are situated which are directly connected to the eyes, transmit the effect of the medicines applied over the feet in the form of massage. Hence every person should use *Padabhyanga*.^[15] It is *Drustiprasaadakara* (Nourishes eyes). *Abhyanga*, through its *Vata* ameliorating action is responsible for better function of *Chakshurindriya*. According to *Bhelasamhita* as *Alochaka Pitta* present in the *Paada* whereas other references consider *Alochaka Pitta* present in the eyes. By doing *Paadabhyanga* we stimulate the *Alochaka Pitta*, which enhances the visual acuity. The *Abhyanga* is exceedingly beneficial to the skin. As *Vayu* is found predominantly in the *Sparshanedriya*, it can be controlled by *Abhyanga*. *Indriya* is a close contact of *Manas*, hence if *Indriyas* remain healthy, mind also automatically remains healthy. It gives positive effect on eyes.^[16]
- 3) **Pratimarsha Nasya**:-It is having special significance in preventing the age related eye diseases.
- 4) **Abhyanga**:-Advised for *Drishtiprasadana*, especially advised to apply on *Shira* and *Pada*.
- 5) **Tarpana**^[17]:- Advised in *Swasthavyakti*, *Vata* and *Pitta* predominant diseases, after *Sodhana* and *Nasyakarma*
- 6) **Putapaka**:- Advised after *Tarpan Karma*.
- 7) **Dhoomapana**:-Advised to avoid the *Kaphavataavikaras* of *Urdhwanga*, advised as *PaschatKarma* after *Nasya*, *Anjana*, *Putapaka* and *Tarpana Karma*.
- 8) **Gandoosha**: Advised for patient having age above 5 years. *Tilataila* can be used for this procedure.
- 9) **Mukhalepa**:-Advised to restore the power of vision only in day time. Remove the medicine before drying.
- 10) **Sirolepa**:-Advised in *Shirorogas*, *Shirokapalarogas*, *Netrarogas*.

❖ *Moordhataila*

Advised for *Indriyaprasadana*, evening is ideal time for *Moordhatailas* especially *Shirodhara*, *Pichu* and *ShiroBasti*.

❖ *Aharas and Viharas (Healthy Diet and Regimen)*

Hitakara Ahara- Ghrita, Patola, Mudga (Phaseolus Radiatus Linn.), Shatavari (Asparagus Racemosus Wild.), honey, Dadima (Punica Granatum) ought to be enclosed in diet.^[18] Vegetables and fruits with carotenoids (beta-carotene, lutein, zeaxanthin) and antioxidant (Kale, collards, bell peppers, broccoli, sweet potato, spinach, green peas, pumpkin, carrots, Swiss chard, peaches, blueberries, oranges, tangerines, mangos, tomatoes, apricots, papaya, cantaloupe, honeydew, avocado and grapefruit). Foods high in antioxidant (Sunflower seed kernels, almonds, peanuts, fortified cereals, wheat-germ oil, fortified soya milk, oil, canned tomato merchandise, green and tofu). Foods that offer metallic element (Alaskan king crab, lamb, bulgur, fortified breakfast cereal, dried beans, pork, poultry (dark meat), whole meal, buckwheat flours and pumpkin seeds). Fish high in polyunsaturated fatty acid fatty acids (Salmon, mackerel, herring, lake trout, sardines, albacore tuna) polyunsaturated fatty acid fatty acids may also be found in wacky, like walnuts. A study printed by researchers at the Massachusetts Eye and Ear health facility according that folks World Health Organization consumed the foremost vegetables made in carotenoids (lutein and zeaxanthin) had a 43 % lower risk of AMD than people who Greek deity these foods the smallest amount. Opt for healthy fats. Healthy unsaturated fats, like the fats found in oil, might facilitate shield for vision. Opt for these healthy fats over saturated fats, like butter, and Tran's fats, like partly modify oils found in pre-packaged foods .Opt for whole grains over refined grain. Opt for whole grains, like whole meal bread, over refined grains, like white bread.^[19, 20]

❖ *Apathyas: Divaswapna, Nisajagarana, Vidahivishtambhibhojana, Vegarodhana, Ajeerna, Adyasana, Soka and Krodha.*^[21]

❖ *Vataghna Upakramas: Snehana, Mrdu swedana, Snehapana, Ghritapana, Mrudu Virechana, Basti,*^[13] *Nasya (snehana)* etc. shall be done for relieving *Vata* vitiation in the body.

❖ *Kriyakalpa (Local eye treatments)*

After body purification *Rasayana* therapies along with *Netra Kriya-kalpa*'s should be used as

- 1) *Seka: Netra Seka* with *Triphala Kwatha* (An eye wash using medicated *Kashayam*.)
- 2) *Anjana: An application of medicine in the form of paste to the eye. (Rasanjan, Haritakyadi Varti, Sarivadi Varti).*^[19]
- 3) *Aschyotana: An administration of eye drops to the eye.*

- 4) **Tarpana:** Keeping medicated ghee over the eye for a stipulated period, making concentric boundary around the orbit. *Tarpana* with *Triphala*, *Goghrita*, *Shatavhadi Ghrita*, *Jeevantiyadi Ghrita*.^[22] (Mentioned in *TimiraChikitsa*).
- 5) **Putapaka:** Keeping medicaments prepared out of plant extracts, fats & certain minerals over the eye for a stipulated period, making concentric boundary around the orbit.

❖ *Samana Chikitsa*

❖ *Rasayana*

• **Classification of *Rasayana***

Table 3: Classification of *Rasayana*.

Primarily divided into two types	a) <i>Dravyabhuta Rasayana</i> b) <i>Adravyabhutas Rasayana</i> (<i>AcharaRasayana</i>)
As per method of use ^[33]	a) <i>Kuti Praveshika</i> (in door use) b) <i>Vatatapika</i> (outdoor use)
As per Scope of use ^[34]	a) <i>Kamya Rasayana</i> (promotor of normal health) i. <i>Prana Kamya</i> (promotes longevity) ii. <i>Medha Kamya</i> (improves mental faculties) iii. <i>Shri Kamya</i> (improves lustre of body) b) <i>Naimittika Rasayana</i> c) <i>Ajasrika Rasayana</i>
According to <i>Prabhava</i> (Effect)	Dalhana mentions two types of <i>Rasayana</i> in <i>Sarvopaghata Shamaniya</i> chapter of <i>Chikitsasthana</i> a) <i>Samshodhana Rasayana</i> b) <i>Samshamana Rasayana</i> .

Classification of *Rasayana* by Sharma A.K. and Singh R.H. 1992.

❖ *Chakshushya Rasayana*.

Table 4: Medicines: *Chakshushya*, Anti oxidant^[23,24] Anti inflammatory^[25] and Neuroprotective.

a) <i>Amalaki</i> (<i>Emblica officinalis</i> Gaertn)
b) <i>Haritaki</i> (<i>Terminalia chebula</i> Retz.)
c) <i>Bibhitaka</i> (<i>Terminalia bellirica</i> Roxb.)
d) <i>Nirgudi</i> (<i>Moringa oleifera</i> Lam)
e) <i>Kumari</i> (<i>Aloevera tourn,ex</i> Linn.)
f) <i>Draksha</i> (<i>Vitis vinefera</i> Linn)

Table 5: Vayasthapana Gana medicines described in Charaka Samhita.

1.	<i>Shatavari root- Asparagus racemosus</i>
2.	<i>Amalaki fruit - Emblica officinalis</i>
3.	<i>Haritaki fruit - Terminalia chebula</i>
4.	<i>Punarnava root - Boerhavia diffusa,</i>
5.	<i>Guduchi bark - Tinospora cordifolia</i>
6.	<i>Rasna root - Pluchea lanceolata</i>
7.	<i>Shaliparni Patra - Desmodium gangeticum</i>
8.	<i>Mandukparni Panchanga - Centella asiatica</i>
9.	<i>Jivanti root - Leptadenia reticulate</i>
10.	<i>Aparajita bark - Clitoria ternate</i>

Vayasthapana Gana was used for Nasya & Basti in ARED^[26]

- **Kalpas** - Amalaki Rasayana, Triphala Ghrita, Vasakadi Kashayam.
- **Code of conduct as Rasayana (Achararasayna):** This is another important type of Rasayana category in relation with Good conduct. The ethics mentioned in this can be classified into three major categories.

A) Which is of more on physical discipline.

B) Social and mental discipline and

C) Spiritual discipline. This is also known as Daily Rasayana (Nitya Rasayana) which needs to be followed regularly. Please refer Table 5 for dos and don'ts when Rasayana procedures are followed.^[35]

Table 6: Code of conduct as Rasayana (Achararasayna).**Do's and don'ts when Rasayana procedures are followed**

Physical conduct	Social and mental conduct	Spiritual conduct
<ul style="list-style-type: none"> • Avoid alcohol • Avoid sexual indulgence • Avoid violence • Avoid over exercise • Go to sleep and awake at regular time. • Keep healthy sense organs. • Daily intake of ghee and milk 	<ul style="list-style-type: none"> • Be truthful • Avoid anger • Keep peaceful mind • Talk with pleasing words / speech • Keep stable and steady mind. • Be compassionate • Be merciful • Think positively with logical reasoning • Avoid ego • Behave yourself • Destroy narrow mindedness • Give respect to others especially elders. 	<ul style="list-style-type: none"> • practice Japa/ chanting • practice Tapa/ meditation • follow cleanliness • do charity • do prayers • Respect and worship fellow beings, animals Follow spiritual life

Eye Exercise

In tired eyes or issue in sustaining attention, eye exercises might facilitate. It is aforesaid that simply some minutes of exercises per day will build your eye muscles stronger and your vision will really improve.^[27]

- 1) Palming,
- 2) Distant and near focusing,
- 3) Rotational movements of eye will help to strengthen eye power.

Eye exercises facilitate to increase retinal blood flow & improvement in vision²¹. Exercises for Macular Degeneration- Since vision is not destroyed throughout AMD, patients are often trained to make best use of the remaining vision. Eccentric Viewing, Eye Exercises to avoid Blind Spots, Eye-Exercises to spice up Reading ability is usually recommended by activity therapists.^[28]





Figure – 1.

Table 7: Eye exercises.

1.	Sunning
2.	EyeWash
3.	Palming
4.	Swinging/Shifting
5.	CandleFlame
6.	Candle LightReading
7.	Playing with the Ball
8.	Vaporization
9.	Cold Pad

- 1. Sunning:** Sunning: the eye is exposed to sun for a amount of 5 minutes daily. First, apply the eye drops created with garlic juice and honey with a glass rod in every eye, afterward sit facing the sun with eyes closed and chin raised, then sway your body from aspect to aspect kind of a apparatus for 5minutes.
- 2. Eye Wash:** once sunning, come to shade and rinse your eyes by blinking concerning twenty times into resolution of *Triphala Kashaya* employing a combine of eye cups crammed to muscles and also the encircling tissues.
- 3. Palming:** Sit well alongside your eyes closed and lined by palms (the fingers being crossed upon the forehead). Elbows need to rest on a cushion in such the way thus on

avoid pressure on the eyeball. Perfectly black field is knowledgeable before the eyes. Improvement in vision and feeling of relaxation and relief of pain and sense of coolness within the top are often knowledgeable. This exercise is often experienced repeatedly throughout the day. Morning is best suited. Fatigue, noise hunger, anger, worry or depression is conditions that build palming troublesome. Whereas palming takes deep respiratory it improves the accuracy and sensitiveness of eyes, nerves and mind. Have deep respiratory and keeps them out closed. See that longer is taken for exhalation than inhalation and continue the exercise until you complete 100 respirations.

4. **Swinging/Shifting:** Moving the eyes from one aspect to a special is termed shifting. Stationary objects seem to manoeuvre within the direction opposite to the movement of the top and eyes. For instance, it can be done by while travel during a very fast-paced train, phone poles and alternative objects (though stationary) seem to manoeuvre within the opposite way. The eyes get rest as long as it is moving. Shifting are often practiced each either with eyes open or closed. Stand one feet apart before of a board with vertical bar like structures, and move your body from right to left or the opposite way around fifty to at least one hundred times. It is necessary to keep eye and also the sight shifting in conjunction with the movement of the head and blink at every finish. Observe that the bar seems to manoeuvre within the opposite way. The right because of swing is to manoeuvre the eyes from one purpose to a special slowly, regularly, ceaselessly, restfully, simply while not effort and while not making an effort to see the opposite object. It is advisable to avoid beginning objects and build no effort to fix the sight at blink once can be done on either side while moving the head, eyes and body rhythmically from aspect to aspect.
5. **Candle Flame:** Sit facing the light concerning one foot apart and gently move the body forward and backward with the rhythm of respiration Continue the exercise until you complete twenty-five to at least one hundred respirations.
6. **Candle light-weight Reading:** Fine purpose reading is useful to the eye. It saves the eyes from cataract, disease or alternative adulthood diseases of the eyes. Shift the sight on whereas line off during a very purpose and blink at the highest every line. The book is unbroken at a distance from that it's going to be seen well. The patient should not look directly at the letters however simply at the white areas between the lines of print and movie that they are dead white. Move the top slightly from aspect and blink usually.

7. **Twiddling with the Ball:** Toss the ball to rock bottom and observe the bouncing ball moving the sight and head at an identical time. Increase the speed of the ball and continue the exercise for concerning fifty to at least one hundred times. Once this toss the ball from one hand to a special hand and move the head and also the eyes in conjunction with the ball, and blink once you catch the ball. Repeat it for 50 to at least one hundred times.
8. **Vaporization:** place 2 or 3 drops of volatile oil or crystals of application in boiling water and by covering your head enable the vapour to strike on the face and keep blinking for a couple of time until sudate.
9. **Cold Pad:** Wipe out the perspiration and place cotton pads, soaked in cold water and squeeze, on your closed eyes and relax for ten minutes.
10. **Tirphala Kashaya Preparation:** Wipe one cup of water and 1 tea spoon full of *Triphala* powder. Boil the water and filter it, when it is lukewarm. Fill up the eye cups and wash the eyes. Fresh *Kashaya* should be prepared for application.

❖ *Yogik Kriya*

Vision is possible only Soul (*Aatma*), Mind (*Mana*), Eye (eyeball) and Visual centres (*Netra Indriya*) act together. *Yogik Kriyas* can facilitate economical operating of (*Netra Indriya*) by assuasive mind.

1. *Trataka* (concentrating on specific object/candle light), (Figure-2)
2. *Bhramari* can facilitate to reinforce *Netra Indriya Bala* and delaying chronic changes^[29]
3. *Surya Namaskara* (Sun salutation).



Figure -2: Trataka Karma.

With the exception of the preventive side, *Yoga* will improve the elemental level of health altogether its aspects also as mental, social and non-secular elements that is recognized by World Health Organization in its definition of health. *Yoga* as outlined by Sri Aurobindo says that, this is often how to reinforce the entire temperament of the individual at physical, mental, emotional, social and non-secular levels. Therefore, it is vital to need up *Yoga* on an everyday basis from youth itself to forestall these issues. This method of promotion of positive health is critical for delaying the entire ageing method to require care of youth for very while.

Once the ageing changes of the eye have started, regular practices of *Tratakas* for 20 minutes, twofold on a day to day will forestall the progression of the unwellness and additionally improve the vision. The elemental set of 8 *Asanas*, *Pranayama* and meditation through intonation of *A, U, M*, and *Om*; additionally facilitate in up ageing changes. Some researchers additionally verified that psychological instability worsened the condition in ARED^[30,31]

***Suryanamaskara* (Sun salutation)**

Eye & the Sun square measure having *Teja Bhoota* dominance. Sun salutation, is supposed to help in maintaining *Alochaka Pitta* healthy and thus maintaining sharp-sightedness. The follow of *Suryanamaskara* as a whole provides an honest range of benefits. It stimulates and balances all the systems of the body, also because the endocrine, circulatory, metabolism and biological process systems. Its influence on the endocrine gland and also the structure helps to forestall pineal degeneration and calcification. Synchronizing the breath with the physical movements of *Suryanamaskara* ensures that, the professional, several minutes daily, breathes as deeply and rhythmically as attainable. This removes acid gas from the lungs and replaces it with contemporary element, increasing mental clarity by transferral contemporary, ventilated blood to the brain. To conclude, *Suryanamaskara* is that the perfect follow to increase health and well-being and prolong chronic changes.^[32]

Management of adulthood eye diseases

It is depending upon the predominance of *Dosha*, the structures affected. Select the simplest suitable *Kriyakrama* or *Sasthra Anusasthra Karma* at right time.

❖ Probable treatment methods for eye care in old age

First ocular manifestation for aging is Presbyopia, the lens is incapable of accelerating its diameter and curvature to focus the near objects.

- **Presbyopia:** *Abhyanga* with *Ksheerasarpi* and *Mrudu Sweda* over the eye lids, *Pratimarsha Nasya* with *Ksheerabala Taila*, *Shiroabhyanga* with *Ksheerabala Taila*, *Tarpan* with *Jeevaneeya Gana Ghrita*.
- **Timira:-** Degenerative changes within the lens and therefore the retina are quite common alongside the aging process, it are often delayed by various treatment methods like *Ghritapana*, *Nasya* and other *Shodhana* therapies, *Siravyadha*, *Triphala*, *Rasayana* and diet etc.
- **Abhishyandhas:-** Inflammatory or congestive condition of various parts of the attention can occur thanks to *Apathya Aharaviharas* or thanks to other systemic diseases. Treatment consistent with Ayurvedic classics based on predominant *Dosha*.
- **Senile weakness of muscle:** -*Snehana*- *Vidaryadi Ghrita*, *Nasya* - *Ksheerabala*, *Moordhataila* –*Ksheerabala Taila*, *Tarpana* – *Jeevaneeyagana Ghrita Pana*
- **Dry eye:** -Dry and lustreless condition of the conjunctiva and cornea are seen more nowadays by increased use of computer and exposure to dust, wind, sunlight etc. it is often prevented by- *Snehana*, *Virechana*, *Nasya*, *Anjana*, *Tarpana Karma*.
- **Normal eyes in old age:** *Angina* with *Souveeranjana* and *Rasanjana*, *Pratimarshanasya* with *Anutaiala* or *JeevantyadiNasyaTaila*, *Siroabhyanga* with *TriphaladiTaila*, *TriphalaGhrita* with *Vara Choorna* and *Madhu*.

DISCUSSION AND RESULTS

As Geriatric eye disorders occur due to chronic changes in the tissue layers, (*DrushtigataDosha Dushti*); sole native treatment will not be useful. Doddering disorders are troublesome to treat because of “*Swabhavabala Pravrutattva*”. As per the principle of a piece of writing, “*Swasthasya Swashthya Rakshana*” interference is typically higher. Preventive measures like *Hetupariverjana*, followed by *Dinacharya*, *Rasayana Chikitsa* (rejuvenation therapy) are planning to be easier to prolong chronic changes in the eyeball. It is necessary to avoid unhealthy effects on the eyes in this modified life vogue by following “*Netra Raksha Vidhi*”. It is possible to delay ageing method by the victimization of *Chakshushya Rasayana* medicines (rejuvenation therapy), beginning in early age; as several *Chakshushya Dravya* possess inhibitor properties. Piece of writing considers body, mind and

sense organs together for the treatment of any illness. Therefore, Eye exercises and *Yogistic* procedures conjointly can be useful in geriatric eye diseases.

CONCLUSION

Following *Dinacharya*, *Ritucharya*, and the standards mentioned in *Samhita* about *Ahara*, *Vihara*, *Panchakarma Chikitsa*, *Rasayana Chikitsa* and *Netrakriyakramas* advised for *Swastha*, is not only reduces the ocular diseases but also delays the age related ocular changes. *Anjana*, *Pratimarsha Nasya* and *Murdhataila* are having key importance in preventing age related ocular changes. *Chakrasusya Rasayana* approach represents an alternate measure to age related ophthalmic conditions.

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